

AI and Human Health

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Participants:

| | | |
|-----------------|-------------------------------|--|
| Naleef Fareed | Biomedical Informatics | Naleef.Fareed@osumc.edu |
| Maciej Pietrzak | BMI | Pietrzak.20@osu.edu |
| Shareef Dabdoub | Dentistry | dabdoub.2@osu.edu |
| Raghu Machiraju | TDAI/CSE/BMI/PATH | Machiraju.1@osu.edu |
| José J. Otero | Pathology/COM | Jose.Otero@osumc.edu |
| Don Hong | Tech Commercialization Office | Hong.923@osu.edu |
| Colin Odden | Government Resource Center | Colin.Odden@osumc.edu |

Asset(s):

Don Hong – Tech Commercialization Office

- Electrical Engineering/Computer Science
- Connections across University → facilitate collaborations
- Encourage submissions for commercialization disclosures

Naleef Fareed – Biomedical Informatics

- Access to experts in patient engagement, clinical data, data visualization
- Interdisciplinary data

Maciej Pietrzak – Biomedical Informatics

- Can provide space for meetings
- Bring problems to solve
- Interface with multiple groups on campus
- Work to deliver results in an easy to understand way

Shareef Dabdoub – Dentistry

- Access to patient population in dental school
- Data visualization, big data, analytics
- Figure out what we can do with data

Raghu Machiraju – TDAI/CSE/BMI/PATH

- Joint analysis in imaging, pathology, omics
- Connections at high level across the University
- Image analysis, machine learning
- Access to many kinds of data

José Otero – Pathology/COM

- Transgenetic mouse studies
- Machine Learning
- Anatomy, physiology studies
- Digital pathology
- International connections, especially Brazil
- Access to underrepresented/underserved sample of patients – Mississippi

Colin Odden – Government Resource Center

- Relationships with OSUWMC IT, College of Medicine IT, Chief Information Officer → rapport with infrastructure to expedite implementation of ideas
- Consulting on underserved populations
- Connections with data visualization people
- Connections to State of Ohio agencies – use state data

Link and Leverage:

- Naleef works on some of Colin Projects – Medicaid populations, underserved populations – could use machine learning to refine data → expedite process from idea to implementation
- José and Raghu collaborate – Raghu connect to omics data people
- Colin can help José connect to Ohio Department of Health infant mortality/SIDS data
- Colin has connections for platforms and storage of large amounts of research data – Shareef identified this as a problem
- Group discussed “What problem in healthcare do we want to solve with machine learning?”
 - Need for interpretable AI: input → output

| Opportunity | Description |
|---|---|
| Utilize digital pathology, clinical data, radiology, etc... to provide genomic signature → more accurate diagnosis and prognosis for cancer and reduce costs of molecular testing | <ul style="list-style-type: none"> • Connect imaging phenotypes to genotypes • Find proxies to save costs for certain tests |
| Use clinical/physiological data to predict respiratory suppression → link to opioid deaths [Feasibility Study] | <ul style="list-style-type: none"> • Proceptive way to predict opioid dependency/deaths at the intervention level • Wearable way (watch?) to measure physiological factors and/or utilize electronic health records |

Rate Opportunities:

| Opportunity | Impact | Ease | Total |
|--------------------------------------|--------------------|--------------------|-------|
| Pathology Clinical Decisions Support | 4,4,5,5,5,5,4 = 32 | 3,3,4,4,3,3,3 = 23 | 55 |



| | | | |
|---|--------------------|--------------------|----|
| Wearable, Integrated Health Tool for Predicting Opioid Outcomes | 5,4,5,3,4,5,5 = 31 | 3,2,2,1,2,1,2 = 13 | 44 |
|---|--------------------|--------------------|----|

“Big Easy”:

| Strategic Opportunity | Characteristic | Success Metric |
|--------------------------------------|--|--|
| Pathology Clinical Decisions Support | More accurate genomic testing | <ul style="list-style-type: none"> • Sensitivity, Specificity of testing • Positive Predictive Value |
| | Quicker clinical decisions → Interventions for patients sooner | |
| | Financially efficient, reduce costs | <ul style="list-style-type: none"> • Financial Analysis |

Pathfinder Project:

| Pathfinder Project | Guideposts | By When |
|-------------------------|---|--------------------------|
| Feature/Data Extraction | Feature Identification | October 15 th |
| | Obtain letters of support from different centers/institutions (research partners) | By time RFA is due |
| | Decide which cancer direction to take: glioma and/or sarcoma | By time RFA is due |

Action Plan:

| | | |
|----------|-------------------------------|--------------------------|
| Raghu | Look for data of sarcomas | October 15 th |
| José | Look for data on gliomas | October 15 th |
| Everyone | Understand/clarify hypothesis | |

Follow-Up Meeting:

- End of September – José’s assistant will send out doodle poll